ASSESSMENT OF THE SOCIAL IMPACT OF FLOODING FOR USE IN FLOOD MANAGEMENT IN THE RED RIVER BASIN

Report prepared for the
International Joint Commission
Red River Basin Task Force
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EXECUTIVE SUMMARY

The purpose of this report is to assist the International Joint Commission on the Red River Basin by providing information on the problems encountered by individuals and communities in coping with the 1997 flood. It also provides a series of recommendations on how to plan more effectively to reduce human hardship in subsequent floods.

The source of information for this report was victims themselves. Fifty-four victims were interviewed in several different communities both within the city of Winnipeg, Manitoba and in surrounding rural areas. They were questioned extensively on how the flood impacted them, their families, and communities. In addition to a wide range of closed questions, many open questions were asked during interviews which permitted victims to better describe their experiences and perceptions.

Qualitative and quantitative data from the interviews were analyzed to identify the most prevalent and most serious of problems faced by victims. The problems were organized according to time sequence, i.e. whether they occurred pre-flood, during, or post-flood (Section 3.1). They were also organized according to which institutional authority has responsibility for rectifying the problem (federal, provincial, municipal or city authority). These appear in Section 3.2. Problems which were prevalent in protected (diked) communities, unprotected (un-diked) communities, and farms respectively are noted in Section 3.3 by type of community.

Figures of selected social impacts which appear in Appendix A are also referenced in the discussion of encountered problems.

From the analysis of data and identified problems, a set of recommendations were made. They are intended to address the key recurrent issues which were problematic for victims of the 1997 flood. They include:

1. Development of a public information system using state of the art information technology.
2. Development of a comprehensive flood management plan involving all levels of government and local communities.
3. Improved systems of warning about risk of flooding and evacuation.
4. Identification of local communities' resource requirements and development of mobilization plans to get resources.
5. Reorganization of Emergency Measures Organization claims process.

There is also a table contained within this report (Table 1) which summarizes which authority(ies) is (are) responsible for institution of ***each*** recommendation, which type of community stands most to

benefit, and whether the recommendation addresses problems pre-flood, during the flood or post-flood.

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1. INTRODUCTION

The purpose of the following report is to provide information to the International Joint Commission (IJC) on the problems which faced and continue to face victims of the 1997 Red River Valley flood. It is intended to improve understanding of those factors or problems which contributed to the hardship experienced by residents and will conclude with a set of recommendations to reduce future losses and aid in improving institutional, community and individual responses to flood events.

The primary data used in this report was collected through interviews of flood victims in the Red River Basin north of the Canadian-American border. The survey interviews were designed to elicit information on residents' experiences during preparation for the flood, during the flood event, and during recovery. Demographic information on the sample is shown in Figure 15 , Appendix A. From the collected data there is evidence of both practical and systemic problems faced by victims in adapting to the flood situation which could potentially be resolved through foresight and improved planning.

Data processing and analysis was conducted to consolidate the large amounts of qualitative and quantitative information generated by the interviews and identify emerging patterns. To better assist the IJC, particular attention was paid to problems faced by residents and communities, and to derive an understanding of the political, social, and technological context in which these problems existed. This analysis resulted in the generation of recommendations found at the conclusion of the document which are intended to be useful to decision-makers and flood managers.

The report contains EIGHT sections:

- EXECUTIVE SUMMARY
- INTRODUCTION to the paper
- review of METHODOLOGY used in data collection
- categorizing of identified PROBLEMS in three ways:
    a. those problems experienced in preparation for the flood, during the event, and in the recovery phase respectively
    b. according to government mandate or area of responsibility (i.e. institutional responsibility)
    c. according to three types of communities (e.g. rural protected, rural unprotected, and farmsteads)
- set of RECOMMENDATIONS to improve planning with regard to the human aspect of flood management in the Red River Valley.
- CONCLUSION
- REFERENCES
- Two APPENDICES containing the following: a) figures of selected quantitative data ; and b) survey questionnaire .

2. METHODOLOGY

Interviews with flood victims were conducted through use of a survey questionnaire which was designed to elicit the psychosocial impacts of the flood on individuals and families (see survey contained in Appendix B). The design of the questionnaire was influenced by the work of previous social scientists specializing in the impacts of disasters, both natural and man-made, on human populations (E. Burke Rochford, Jr. and T. Jean Blocker, 1991), (Graham A. Tobin and Jane C. Ollenburger, 1996), (Gerald L. Hutchins and Fran H. Norris, 1989), (Robert O. Hansson et al, 1982), (Jasmin K. Riad and Fran H. Norris, 1996), (Shirley B. Laska, 1990), (S. Martin Taylor et al , 1991).

Contained within the disaster literature there is a clear rationale for beginning victim interviews as soon as possible after the disaster event to increase the accuracy of measurement of psychosocial impacts. This need for expediency required the timely creation of the survey questionnaire in early summer, 1997. Limited funds and manpower also dictated that the sample size must be constrained by these limited resources. In addition, the piloting of the survey quickly revealed that the survey, initially designed to be one hour in length, required 100-200% longer for victims with heavy financial and personal losses.

By November 1, 1997, fifty-four in depth in-person interviews were conducted with flood victims selected from six different groups. These six groups of victims are characteristic of the six types of communities or households which were impacted by the flood in Manitoba. These victim groups include urban residents (Kingston Row/Crescent), suburban residents (St. Norbert), residents on the rural-urban fringe (Grande Pointe), residents from rural protected (diked) communities (St. Adolphe), residents from unprotected (undiked) communities (Ste. Agathe, Red River Drive), and farmers. The intent was to capture a snapshot of the broad range of impacts on households in all relevant geographic and socio-economic categories affected. Given the limited resources available, the selection of these communities was an attempt to sample across relevant categories of victims. The interviews themselves were solicited primarily by random knocking on doors and word-of-mouth referrals. When winter approached, the assistance of the local Re-entry Offices was used to locate victims because there were a significant number of people who were no longer living on their property and couldn't otherwise be located.

The survey determined psychosocial impacts by examining several areas of impact at the household and individual level. The first area or section of the questionnaire describes and gives monetary estimates of *damage* sustained by the household, loss of livelihood, examines the *perception* of risk and warning, and *measures* taken to protect property. The second section examines the *evacuation* process, and *relocation* issues. The third section elicits information on individual *adaptation* to the flood situation , the impact of the flood on *family life* , and *stress* and *physical health* impacts. The fourth section overviews impacts on *community* life, and identifies the *resources* used/required in preparation and recovery from the flood . The final section is on *clean-up* and *recovery* issues, including identification of " *irreplaceable* losses" (if any), and *degree* of *overall* impact of the flood on individuals and households. Several sections of the survey relate to impacts of the flood on business (or farm) property where applicable.

The survey design facilitated the retrieval of information on problems experienced in preparation, during evacuation, and recovery- including unanticipated problems - through a combination of open and closed questions which allowed for respondents to explain their perceptions, raise questions, and even make recommendations for improved management of future floods.

The recommendations that appear at the conclusion of the document are the result of both quantitative

and qualitative analysis of collected data. The survey had closed questions which lent themselves to quantitative analysis; some are depicted in graphical form in Appendix B and will be referred to throughout this paper. Analysis of the large body of qualitative information was done through categorizing of answers to open-ended questions, identification of patterns in interviewees' responses, and examination of the context in which the responses were given. Qualitative and quantitative data were finally examined together to help generate a comprehensive picture of victims' experiences. The recommendations reflect what was learned in the analysis and are intended to be helpful as the IJC reviews lessons learned in the 1997 flood experience, and plans for improved flood management.

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3. IDENTIFICATION OF SOCIAL IMPACTS

To assist the IJC, the primary interview data was analyzed in several steps. First, qualitative data gained in the victim interviews was reviewed and consolidated to generate a list of problems encountered by victims. Particular attention was paid to problems which respondents experienced, and counts were made of the number of respondents raising each issue or problem. The problems were further broken down by whether they were primarily a problem which occurred in flood preparation, during the flood, or post-flood (i.e. a time sequence). These categories appear in section 3.1. Issues were then analyzed according to which authority or institution might be responsible for rectifying or reducing the problem in future. These appear in section 3.2, and include Federal, Provincial, Rural Municipal, and City responsibilities. Clearly, this detailed and varied categorization of problems must overlap as problems appear across different categories; problems are examined for "when " they occurred (pre, during and post flood) as well as according to who is responsible for remediation (federal, provincial, municipal, city authorities), and by community type (protected, unprotected, farmsteads). The exposed problems should reveal some of the greatest weaknesses in previous flood management and keys to future improvement.

3.1 Analysis by Time Period

3.1.1 Before the flood

Lack of foresight and planning. The lack of planning for flood events was seen as a prevalent problem in the opinion of many flood victims. No known comprehensive provincial or municipal plans existed to ensure that flood preparation activities could be done in a *timely* and *efficient* manner even after the flood of 1996 exposed the need for improved planning.

No established mechanisms for accessing and interpreting information. Information was essential to assessing the risk to individual properties and communities, yet individual property owners felt left on their own to gain information from whatever source that they could. They had to base decisions on sometimes questionable information sources (i.e. media, word-of-mouth). In addition, some government departments gave out contradictory information, increasing stress to individuals and reducing government credibility. At a community level, there were instances of weak leadership. This resulted in a lack of organization, a lack of decisiveness in assessing risk and allocating resources. Technical expertise was also missing, reducing the local capacity to interpret information and assess which areas or properties were truly at risk, and which needed to be prioritized.

Lack of needed resources. A prominent problem faced in the flood was the inability of residents to either get resources they needed or to get them in time to adequately prepare for the flood. Resource distribution was poorly organized and inconsistently applied by some local authorities, and no system of prioritization for resource allocation was clear. Residents had difficulty clearing snow prior to beginning construction of their dikes, and had great problem getting sandbags, or sand and bags simultaneously. There was also difficulty coordinating volunteer labor with the availability of sandbags because availability of the latter (in particular) was highly unpredictable. Another widespread problem at a local level was insufficient expertise on how to build dikes. For families with young children, a lack of resources for child-care was a serious issue in the urgency of preparation; it was often an unsafe environment for children.

3.1.2 During the flood

Insufficient warning. Not enough warning was given to communities and individual property owners about the threat of the flood, and the need to evacuate. Because information received by residents in some communities was poorly coordinated, and often inconsistent, inaccurate or too late, they could not take adequate action to save their property. Some residents also had insufficient warning of the need to evacuate, with some evacuation alerts delivered after they had left, if at all. The mechanism(s) for issuing and delivering alerts were faulty or inconsistent. This increased losses to households because less items of value could be removed in time. Data on adequacy of warning time are shown in Figure 14 , Appendix A.

Unclear evacuation procedures. For some residents evacuation procedures were confusing; many got information through word-of-mouth or the media. Procedures related to the shutting off of hydro electricity were particularly problematic because many residents were relying on pumps run on electricity to keep water out of their homes after evacuation. Many residents were unaware of the protocol followed by Manitoba Hydro. Refer to Figure 9 , Appendix A, which indicates confusion during the flood was quite high for many respondents, particularly those who did flood. Unclear evacuation procedures likely exacerbated these feelings in the crisis.

Inadequate distribution of sandbags. One rural municipality, at high risk from the flood, abandoned the existing purchase order system for distribution of sand and bags at the height of the crisis. This left some residents feeling resentful after waiting several days in line-ups for their purchase order number to be filled. Overall, respondents described sandbag distribution as erratic and poorly organized. There were also simply not enough bags available. Respondents reported feeling frustrated with being unable to do anything except wait for resources. Refer to Figure 8 , Appendix A, which shows a substantial number (60%) of flooded victims feeling no sense of control during the flood.

Unclear lines of authority and responsibility. This problem related to various government departments and the military. Many victims were unclear which government authorities to turn to for various types of information and assistance, and didn't know who had ultimate authority to grant requests. The role of the military and their level of authority was particularly problematic. In addition, manned check points caused stress to residents attempting to check back on their property because procedures for entry and exit into the areas were vague and inconsistently applied. Severe conflict arose in some instances. Note that Figure 2 , Appendix A, indicates increased numbers of disagreements with people outside the family for all victims of the flood.

3.1.3 Post Flood

Lack of information about resources. Little information was available on how and where services and

resources required by victims could be accessed. Returning victims didn't know what they were entitled to upon reentry, what services they would need, and how best to access services. Some victims felt abused by unscrupulous service providers who over-charged and did inferior work. In addition, there was no differentiation or prioritization of flooded versus non-flooded evacuees in provision of services. There was no tracking system (e.g. database) to track the circumstances of victims and prevent the need for victims to repeatedly tell their circumstances when accessing various services; this increased stress on many victims according to interview data. In fact, flooded victims continued to report substantially elevated levels of stress even after the flood (see Figures 5 and 6 , Appendix A). In fact, Figure 6 shows increases across all categories of stress symptoms (loss of sleep, depression, difficulty coping with problems, irritability), even after the flood.

Lack of information about health concerns. Health information post flood was disseminated slowly and not to every household. Some homes were finally condemned for health reasons only after several months, often after costly work had already been done to restore the home (because residents were unaware of the health risk). There seemed no efficient communication link between the Health Department and Emergency Measures Organization assessors about homes at risk due to health reasons; this contributed to extensive delays.

Inadequate claims process. EMO process for claims assessment and compensation was excessively lengthy, poorly organized, and inefficient. Resident complaints about the EMO claims process included mention of frequent and confusing policy changes, poorly defined guidelines, inconsistent application of rules, excessive delays in receiving responses to inquiries and in getting financial compensation, and lost files. Of particular stress was the failure of EMO to provide an itemized list of which losses submitted to them were covered (versus not covered) in the financial awards. Figure 9 , Appendix A, "Emotional Expression of Confusion" reveals that a substantial number of flooded victims still experienced "extreme" confusion even after the flood. Some reported that this confusion was largely related to the EMO process. Further, there was no link between EMO and banking institutions, leaving many victims unable to secure enough funds to begin repairs; banks refused to be sufficiently flexible to lend them money without EMO's assurance that the victim was entitled to a certain minimum amount of money. This assurance could not be provided. This caused delays in repairs to homes and significant household disruption for many families.

Barrier between city residents and rural victims. Misconceptions about the flood have created a barrier between city residents and rural flood victims, according to respondents. The experience and perception of many city-dwellers is that the flood and its impacts are over; this is contrary to the experience of rural victims. Many survey respondents spoke of strife and disagreements with extended family, friends and acquaintances related to this issue and the issue of the amount of compensation to which victims should be entitled. This may be supported by Figure 2 , Appendix A, which shows over 40% of all respondents indicating a rise in disagreements with people outside the family.

3.2 Institutional Responsibilities

3.2.1 Federal Responsibilities

Lack of application of past experience. Federal governments failed to apply lessons learned from recent Canadian experiences with flooding (e.g. Saguenay, Quebec) to improve response to the Red River Valley flood of 1997. There also is concern among victims that conflict continues to exist between federal and provincial governments in establishing cost sharing guidelines related to the flood. Some victims feel their interests are overlooked at the higher levels of government.

Lack of communication about the role of the military. The process for bringing in military aid to various municipalities and communities during the flood was not understood. ***How much*** authority the military had, ***what type*** , and ***under what circumstances*** also was unknown. It was not clear if the military were to help residents in general preparation for the flood (i.e. assist with sandbagging) or only to aid in rescue and evacuation operations. It was also uncertain if military personnel were to man pumps for people forced to evacuate. This lack of clarification contributed to some ill-feelings and some resistance to the military presence.

3.2.2 Provincial Responsibilities

No effective use of information technology. Flood related data was not available to threatened areas in a form that was comprehensive, understandable or useful in decision-making at a community or individual property level. It was unclear which government departments were the appropriate source of certain types of information, and there was contradictory information given by different government sources. In the recovery period, there was no mechanism to efficiently track victims' circumstances, prioritize victims for services according to need, ease access to service, or prevent victims needing to repeat their stressful circumstances each time they received service.

Inadequate use of provincial public relations departments and the media. Conflict and differing perceptions of the flood between city residents and rural victims could be mediated by a more thorough and accurate portrayal of the flood, according to many victims. In addition, the portrayal of continuing conflict between federal and provincial authorities related to how to share the costs of the flood reflects poorly on both levels of government.

Poor communication. This was a problem between the provincial government and at-risk communities. Communities affected by provincial decisions/activities to manage the flood (e.g. cutting roads, plugging culverts, floodgate activities, etc.) felt that some forewarning would have been appropriate so they might prepare. There also is continuing frustration with some provincial authorities' denial that they did some of these activities during the crisis. There is also a belief among victims that the provincial government should have remained more "hands-on" with communities and better facilitated the accessing of resources from other parts of the province. Rural victims in particular expressed feeling abandoned by the provincial government.

Poor preparedness of the Emergency Measures Organization (EMO). This was a prevalent problem. There appeared to be little prior planning for how to conduct proper assessments in the face of a sizable flood, how to establish an efficient paper flow, how to network with impacted communities, and network with other government departments (e.g. Health) about specific cases. A lack of confidence in the compensation system was exacerbated by vague guidelines for compensation, continually changing policies, and lack of clarity about which losses were eligible for coverage.

3.2.3 Municipal Responsibilities

Inadequate risk assessment and resource allocation. Some communities felt municipal authorities did not adequately assess the risk to some properties and did not therefore prioritize resources properly. Information about the flood which was available at a municipal level was seen as conflicting or incomplete and was not available in a form which could be readily used by local authorities to determine risk. Difficulty interpreting flood data and information was exacerbated by a lack of knowledge at a local level. At a municipal government level, manpower was also very limited, and a large geographic area to be protected. Consequently, organizing resources and distributing them efficiently was beyond the capacity of the municipal government. The failure of a distribution system for sand and bags at the

height of the crisis (as experienced in one municipality) is symbolic of failed planning and poor organization.

Lack of technical expertise. In many communities the lack of practical technical advice at a local level was a big problem. Few residents knew the proper construction of a dike; trained people were needed when dikes were begun to ensure their adequacy. Conflict over how to build a proper dike erupted in violent confrontation in one community; to rectify the problem, one resident brought in a private engineering consultant. (Please take note of Figure 2 , Appendix A which measures if there was an increase in disagreements with individuals outside the family" ; it shows increased disagreements for all groups of respondents). The stress experienced by all respondents during the flood (as per Figure 5 , Appendix A) was very high. Lack of knowledge on how to build a dike might likely have exacerbated stress; stress might also have contributed to the violent confrontation that ensued in one community.

Term "mandatory evacuation" was problematic. It was unclear what "mandatory" meant. Residents felt the mandatory evacuation order was inconsistently applied, and in some cases homes were saved because residents did ***not*** evacuate. Others felt they were required by law to leave. After the flood, this has still not been satisfactorily explained, according to many victims. Some feel highly resentful of losing their homes after evacuating if, in fact, it was ***not*** required. Some are clearly stating they will not leave next time.

No tax breaks. Victims were not offered an opportunity to defer their property taxes or have them reduced. This includes victims who lost their homes. Some residents felt angry that the municipal government did not assist them more in this regard, even by deferring taxes until claims settlements began to arrive.

Inadequate coordination of government activities. This relates particularly to a lack of coordination between provincial and municipal governments. Some victims believe that better coordination would have resulted in improved availability of information pre-flood, better access to resources (e.g. sandbags, boats…) and a more efficient recovery.

3.2.4 City Responsibilities

Authorized dismantling of permanent dikes. City authorities granted permission to some individual property owners to cut their permanent dikes. Over recent years, this was done for aesthetic reasons. These arbitrary decisions placed one city community at much greater risk from the flood and fostered community strife.

Inadequate instruction on dike-building. Most residents did not know how to build a proper dike. This resulted in severe conflict in one neighborhood as individuals argued heatedly about how it should be done.

Poorly established property patrols. After evacuation, people were concerned about the fate of their properties and wanted to assist in patrols. City departments initially resisted allowing residents to help patrol the communities. They relented however, once city workers became exhausted. In addition, protocol for re-entry to the communities was inconsistently applied which made checkpoint crossings stressful and unpredictable for many residents.

3.3 Problems by Community Type

3.3.1 Communities Protected by Permanent Dike (non-flooded)

Poor access to information. Prior to the arrival of the flood waters, some residents felt that municipal and provincial authorities minimized their concerns, making it difficult to get accurate information.

Poor communication regarding evacuation procedures. Residents were unclear about what to do on their premises prior to leaving, where to go, and what they were entitled to as evacuees.

Livelihood Impacts. During the flood, some residents lost their child-care facilities due to daycare closures and had to take time off work. Others had to take time off work to chauffeur children to schools while they were evacuated.

3.3.2 Communities Not Protected by Permanent Dike (Flooded)

Residents' concerns minimized. Some residents were told by government authorities that they were not a priority for resources such as sandbags or labor. Consequently, some did little then to prepare, believing the risk to be low. They also didn't want to absorb huge costs in preparation that they would not be compensated for if they didn't flood. Some homes and their contents, including irreplaceable items of sentimental value, were lost due to the lack of warning and preparation for the arrival of the flood.

Lack of resources. Many residents could not get needed sandbags, labor or other resources to prepare for the flood. There were not enough resources available, and resources were uncoordinated so there might be, for instance, empty bags but no sand. This increased stress enormously in some communities; it was also perceived as the pivotal failure which resulted in the loss of some homes, according to victims. See Figure 5 , Appendix A, which shows the high stress, and other stress related problems, among flooded victims ***during*** the flood.

Property expropriations still undecided. Even after several months, some residents are unable to rebuild on their properties because they may be expropriated to build permanent community dikes. Plans to build permanent dikes (including the dike locations) in some communities have been proposed but not finalized; some residents are aware their properties may need to be expropriated by the municipality for the building of the dike. These families are still awaiting the municipality's decision before they can decide if they should invest in rebuilding. This delay is extremely stressful on families.

Insensitive compensation process. One of the primary complaints about the claims process relates to how it fails to respond to victims' needs. Other common comments by victims include references to rude, ill-trained employees, confusing and inconsistent policies for compensation, excessive delays and lack of clarity about entitlements for compensation. Young families who lost the entire contents of home and yard have particular difficulty with the lack of compensation for children's toys. Some residents feel the stress of coping with the EMO claims process was equal to or greater than the stress of the flood event itself. Comparing problems experienced during and post flood, i.e. Figures 5 and 6 , Appendix A, show that for flooded respondents stress related symptoms remain very high even after the flood. And even more respondents had increased "difficulty coping with problems" ***after*** the flood than during.

Slow dissemination of Red Cross funds. In addition to concerns about how long it has taken for donations to be distributed, some respondents also have concerns that the Red Cross' needs assessment for financial aid is not adequate.

3.3.3 Farms (Flooded)

Inadequate notice of evacuation. This posed particular difficulty for farmers if seed, grain or livestock

needed to be quickly relocated. Farmers felt they had only themselves or volunteers to rely on for help moving livestock and grain. Farmers had difficulty accessing space for their livestock; sometimes livestock had to be accommodated at several other farms making maintenance of the livestock difficult. Finding enough trucks to move large numbers of livestock was also a challenge.

Need for provincial government's assistance. Farmers felt that municipal authorities were spread too thin in trying to protect rural communities and farmsteads, and needed provincial government's help to aid residents and supply resources across such a wide geographic area.

Insufficient numbers of sandbags. Resources were poorly organized and insufficient for a flood of significant magnitude. Out of desperation, some farmers literally stopped trucks of sand on the road and persuaded the drivers to deliver to their property rather than to the intended destination.

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4. RECOMMENDATIONS

The following recommendations are intended to provide direction to decision-makers on the most urgent requirements for reducing hardship to at-risk communities in advance of, during, and after a flood. The information obtained from victim interviews, both qualitative and quantitative, led to the identification of the problems/issues described in some detail in Section 3 of this report. The recommendations follow from the data analysis, and were deliberately kept to a minimum number so as to be manageable; these five recommendations address issues pivotal to eradicating the most obvious failings in flood management which were revealed this past spring. They are as follows:

1. **Development of a Public Information System using state of the art information technology.**
   This technology can be used to ensure that information is brought together from many sources, both government and non-government, and quickly updated as necessary. This is essential during a flood. The information system must contain all relevant data needed in flood prediction and to facilitate the preparation process (e.g. water levels, individual property levels, calculations for sandbag requirements, resource locations and stockpile numbers, government departments' mandates and policies, emergency protocols, etc.). It also should be capable of storing information on services for victims and maintaining a registry of victim profiles which is easily accessible by service-providers and government. The information system must be available at a local level, and used by individual households when necessary. This requires it be supported by knowledgeable staff committed to meeting local community needs. The lack of consistent accurate information (which residents could access and use in decision-making) contributed to enormous stress in preparation for the 1997 flood and considerable resentment towards government.
2. **Development of a Comprehensive Flood Management Plan involving all levels of government and local communities.**
   Such a plan requires a commitment from the federal government to apply lessons learned from previous flood experiences in Canada to prepare an integrated comprehensive response to future floods. This includes clarification of a provincial-federal cost sharing formula for flood damage. This plan also requires identification of various federal, provincial and municipal roles and responsibilities in flood fighting and recovery. There must be established lines of communication capable of enhancing quick and decisive response in a crisis. The circumstances under which the Canadian Military may be brought in, their ensuing role and authority should be clear. These roles

and responsibilities of various government authorities during a flood must be understood at a local level. Also at the local level, residents need to have prior training in the essential practical aspects of flood preparation, possibly with some local residents having specialized training so they may take on leadership roles when necessary. To accomplish this, technical expertise must be brought to the community. Failure on the part of all levels of government to establish a comprehensive flood plan which addressed the needs of at-risk communities contributed in large part to a general feeling among many victims that the government has been incompetent in predicting and handling the 1997 flood, and insensitive to victims' hardships.

3. Improved Systems of Warning about risk of flooding and evacuation.

Once an efficient information system is available to accurately assess risk at a local level, there must be an established, consistently applied, process for warning families about their individual level of risk. It must also be constantly updated. There should be a mechanism in place for alerting people at regular intervals of their risk in advance of the flood. This mechanism (whether public meetings, hand-delivered alerts or mailed alerts, etc.) must not fail in the crisis. This is particularly true once the need for evacuation is identified. It also must be clear whether evacuation is mandatory and what exceptions, if any, might be made. Warning of the potential need to evacuate should be given as far in advance as possible to give adequate time to prepare and prevent losses of irreplaceable items. Lack of warning both about the enormity of the flood and the need to evacuate clearly contributed to hardship to families impacted by the 1997 flood.

4. Identification of Local Communities' Resource Requirements and Development of Mobilization Plans to Get Resources.

Each community needs to complete a self-assessment. This might best include what each property owners' needs are if water levels rise to record limits. This will allow for an approximation of resources that would be needed in the community when another flood is imminent. Local government can then develop a plan to access necessary resources such as sand, bags, and even labor and other incidentals like pumps, boats, generators, etc. Communities can also create a plan on how they would mobilize their own local expertise, manpower and other resources to help in flood preparation. This would help address the greatest criticism of many 1997 victims- that local government was unable to predict local needs and supply necessary resources. By developing a mobilization plan that also prioritizes resource allocation based on an objective process, it will also reduce criticisms that resource distribution was neither equitable nor rational.

5. Reorganization of Emergency Measures Organization Claims Process.

The EMO claims process used in 1997 faltered largely because of a lack of foresight and planning. A typical example was use of an outdated form letter which led many victims to believe that what was called their "maximum award" on one form was, in fact just that, when it was not. Victim interviews revealed that the anxiety resulting from that ill-written letter was enormous and was seen as symbolic of the compensation process. Figure 6 , Appendix A, reveals the continued stress and stress related symptoms among flooded victims during the recovery phase (i.e. after the flood). There is need for a mechanism to ensure that the EMO claims process comes into the community and is responsive to victims' needs. EMO should also work more closely with government departments such as Health, or Energy, Mines and Resources, etc. They could then expedite the provision of services to families or the condemning of homes. There should be an efficient means of conducting case reviews involving various departments when appropriate.
A more efficient paperwork flow is also necessary. One option which would reduce paperwork, and make case inquiries more straightforward, would be a traditional case management approach. To do this, training of EMO personnel would need to be changed and improved. This approach would increase the accountability of employees, hopefully improve the quality and sensitivity of the service, and the overall efficiency of the compensation program. All of these problems were frequently raised in victim interviews. Better planning by EMO Claims Department would also call for a review and clarification of policies and guidelines for compensation. This preparation, in advance of the next flood, should prevent the frequent and confusing policy changes recently

experienced, reduce inconsistencies, and ensure speedier compensation. It should also make it easier to provide information to victims on what items are and are not compensated for in the program.

Table 1 Application of Recommendations

				Applicability of Recommendation						
	Flood Sequence			Authority				Community Type		
Recommendations	Pre	During	Post	Fed	Prov	M. .l	City	Diked	Un-Diked	Farm
1. Public Information System	X		X		X*	X*	X	X	X**	X**
2. Flood Management Plan	X	X		X	X*	X*	X	X	X**	X**
3. Warning System	X	X			X	X*	X	X	X**	X**
4. Resources Mobilization Plan	X	X			X	X*	X	X	X**	X**
5. Claims Department Reorganization	X		X		X*	X		X	X	X

X - indicates recommendation addresses problems relevant to that category
X* - indicates leadership role required
X** - indicates urgency

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5. CONCLUSION

There is no doubt that the flood of 1997 resulted in hardship to many families and communities in the Red River Valley; however, like any crisis situation, the flood has afforded an opportunity – an opportunity to learn from past errors and evoke necessary changes. The recommendations in this report have focused on changes which must be instituted in flood plain management in the Red River Valley; they clearly require mobilization of various authorities and communities, and an atmosphere of intense cooperation among all stakeholders. Essential to both of these is "vision" and long range planning. To this end the role of the IJC is of the utmost importance.

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APPENDIX A

Graphed Results on Selected Social Impacts from Victim Interviews

Total residents : include Grande Pointe, St. Norbert, Red River Drive, Ste. Agathe, St. Adolphe, Kingston Crescent / Row, and farm respondents

Flooded residents : Grande Pointe residents' responses were used in analysis as the "flooded" community

Evacuated non-flooded residents : St. Norbert residents' responses were representative of the "evacuated" non-flooded community

Figure 1: **Increase in family disagreements during / since the flood.**

Figure shows that family disagreements have increased overall for flood victims, with flooded victims experiencing more of an increase than evacuated non-flooded victims.

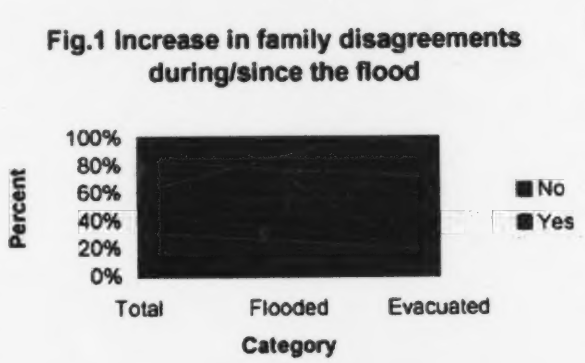


Figure 2: **Increase in disagreements with people outside the family during / since the flood.**

This Figure shows both flooded and evacuated non-flooded victims to have experienced an increase in disagreements with people outside the immediate family; flooded victims saw more of an increase. Forty percent of total respondents reported an increase in disagreements outside the family.

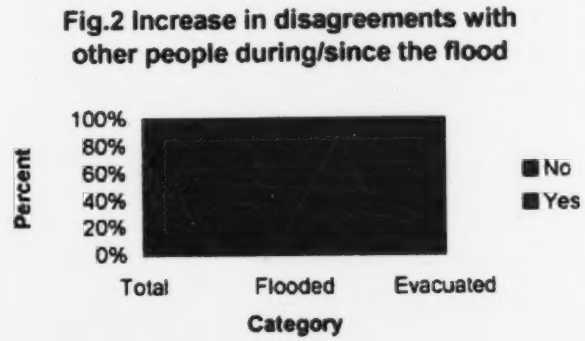


Figure 3: **Increased conflict in family believed by respondents to be due to the flood.**

Results show some increase in conflict in families of both flooded and evacuated non-flooded victims, with substantially more families experiencing an increase among the flooded sample.

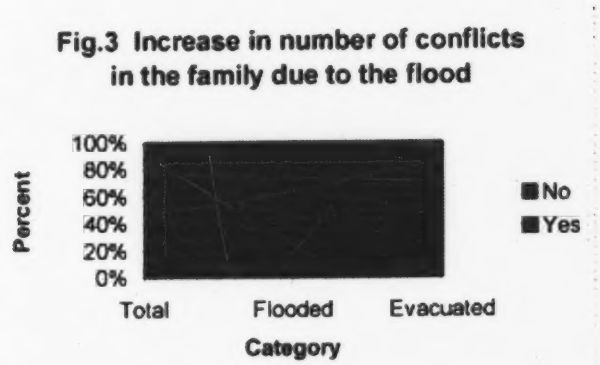


Figure 4: **Increased individual stress during the flood as compared to before the flood.**

Substantial numbers of both flooded and non-flooded respondents reported an increase in stress during the flood. Almost 80% of flooded victims experienced increased stress.

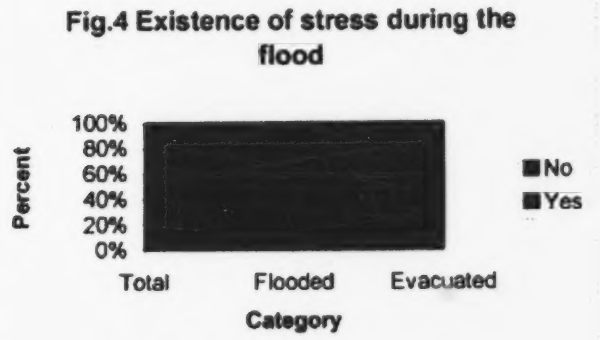


Figure 5: **Percentage of respondents experiencing "problems" during the flood.**

In interviews, respondents were asked if they had experienced an increase in each of the following "problems" during the flood as compared to before the flood:

- stress
- loss of sleep
- depression
- difficulty coping with problems
- irritability

Data is provided for one flooded community, one evacuated non-flooded community and for the total of all (6 categories of) respondents.

Results show large numbers of flooded respondents showing increases across all categories during the flood, with lesser numbers of other respondents showing an increase in these characteristics.

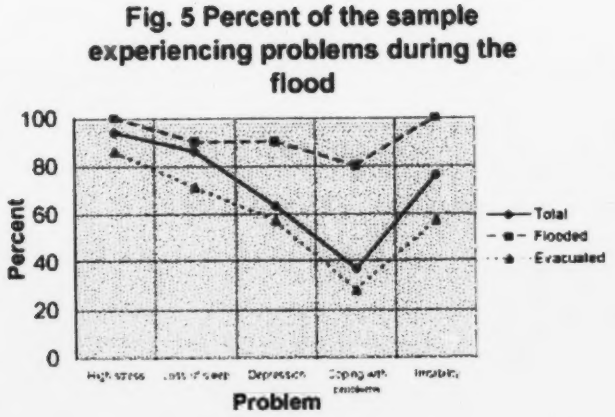


Figure 6: **Percentage of respondents experiencing "problems" after the flood.**

Respondents were asked if they'd experienced an increase in each of the following symptoms after the flood as compared to before the flood:

- stress
- loss of sleep
- depression
- difficulty coping with problems
- irritability

Comparing Figure 6 with Figure 5 (percentage of respondents experiencing problems during the flood) shows that numbers of respondents experiencing stress, loss of sleep, depression, and irritability receded somewhat after the flood although much less so for flooded victims. However in the category of "difficulty coping with problems" the number of respondents of all types went up as compared to before the flood or during the flood.

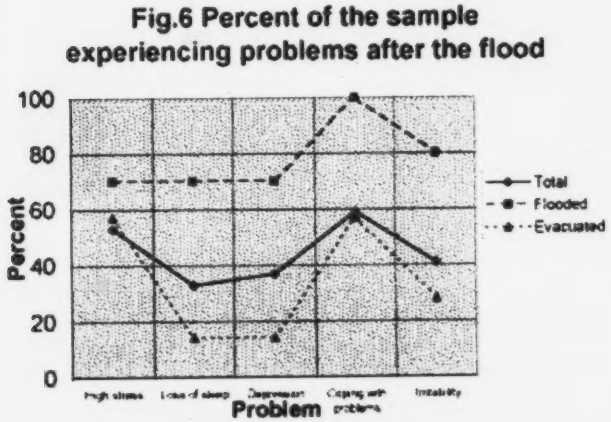


Figure 7: **Percentage of sample experiencing health problems during the flood.**

Respondents were asked to compare their experience of each of several health symptoms during the flood with before the flood. Symptoms included chest pain, dizziness, numbness, change in appetite, tiredness, digestion problems.

Results show flooded respondents to have overall experienced the greatest health impact along these categories of symptoms during the flood. "Tiredness" was reported by a substantial number of all respondents (over 70%).

Figure 8: **Emotional expression of sense of control (during and after the flood).**

Results indicate that, in general, "sense of control" was higher in respondents in the "total respondents" and "evacuated non-flooded" groups. No improvement was seen in the flooded group even after the flood; 60% reported no sense of control both during and after the flood.

Fig.8 Emotional expression of sense of control

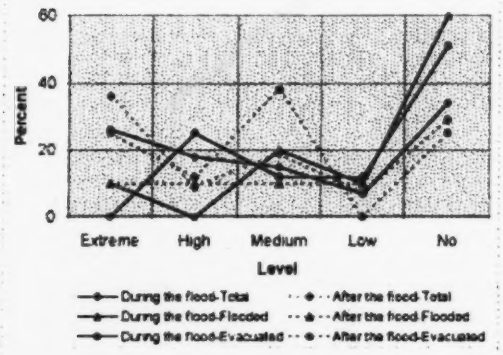


Figure 9: **Emotional expression of confusion (during and after the flood).**

During the flood, high numbers of respondents - both flooded and non-flooded reported "confusion". After the flood, non-flooded respondents reported much less confusion while 30% of flooded respondents still reported extreme confusion.

Fig.9 Emotional expression of confusion

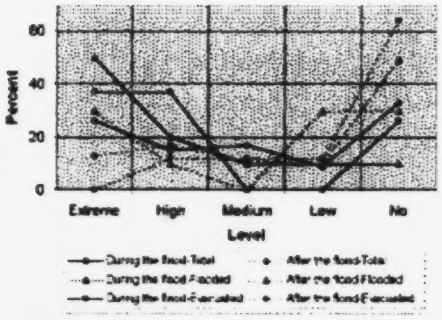


Figure 10: **Emotional expression of fear (during and after the flood).**

Most noteworthy here is that after the flood over 90% of evacuated non-flooded respondents reported no fear , while only 40% of flooded respondents chose no fear .

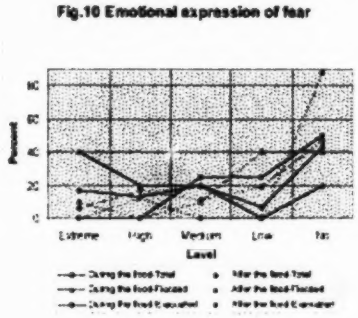


Figure 11: **Emotional expression of dependency on others (during and after flood).**

Most noteworthy here is that among flooded respondents dependency on others was quite high during the flood (with 50% reporting extreme dependency); after the flood 60% still felt moderate (medium) dependence on others. During interviews this post flood dependency was described by some respondents as being related primarily to dependency on the EMO compensation process.

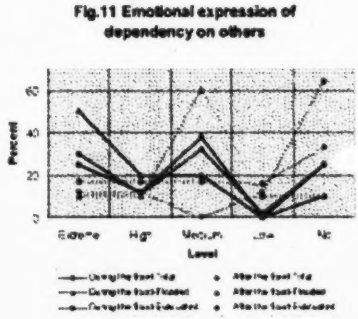


Figure 12: **Emotional expression of anger (during and after the flood).**

The results here show a clear contrast between the flooded and evacuated non-flooded respondents both during and after the flood. During the flood over 70% of non-flooded respondents felt no anger while 70% of flooded respondents felt extreme anger . Similarly, after the flood close to 80% of flooded victims felt extreme anger , while over 80% of non-flooded victims felt no anger .

Fig.12 Emotional expression of anger

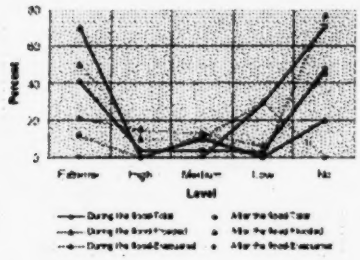
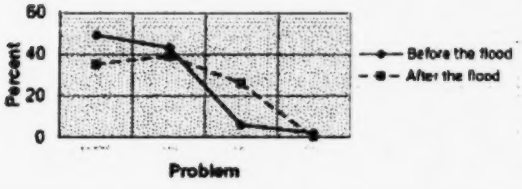


Figure 13A, 13B, 13C: **Personal Characterization of Health.**

Respondents were asked to rate their own health as excellent, good, fair, or poor, prior to the flood and after.

Results show among the total respondents (Figure 13A), less responses of excellent or good health after the flood and a corresponding rise in the choice of fair to describe individual health.

Fig. 13a Personal characterization of health (total sample)



Among flooded respondents after the flood (Figure 13B), 20% of respondents no longer chose excellent to describe their health. Correspondingly, 20% more respondents chose the fair category to describe their health after the flood.

Fig. 13b Personal characterization of health (flooded community)

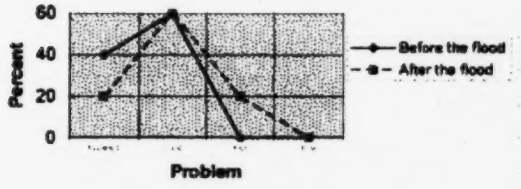
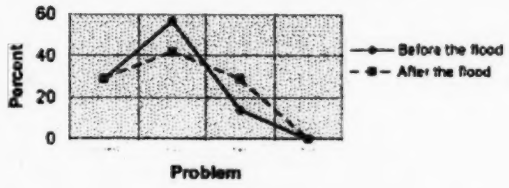


Figure 13C shows that for non-flooded evacuees there was a decrease in rating of health as good after the flood and a corresponding increase in fair responses.

Fig. 13c Personal characterization of health (evacuated community)



Overall, all categories of respondents (total, flooded, non-flooded), showed some deterioration in physical health when comparing before the flood with after.

Figure 14: **Adequate Warning Time**

Respondents at each location were asked to express their perception of adequate warning time. Results are clearly indicating the difference between the city and communities outside of the city.

Kingston Crescent area residents got adequate warning (90% of our sample). Outside communities experienced variable warning with the flooded community of Grande Pointe obviously not having adequate warning time (80% of our sample).

Fig.14 Adequate of warning time

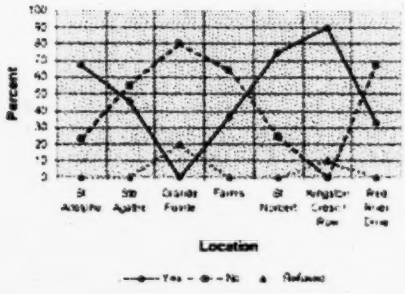


Figure 15A, 15B, 15C: **Demographic data.**

Gender, age and education levels of respondents are shown in these three graphs.

It is important to note that females were more responsive to our request for interviews.

Most of the respondents fit into age group between 35 and 54 years.

People with higher education level were more prepared to share their experience with us.

Fig. 15a Gender of respondent

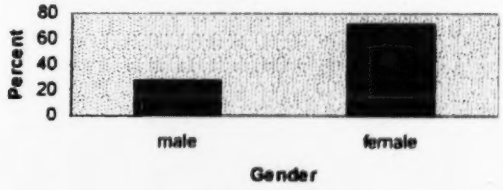


Fig. 15b Age of respondent

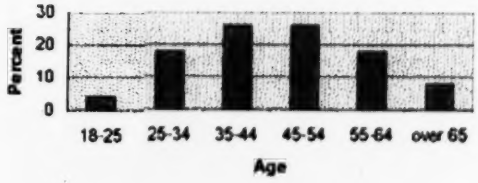
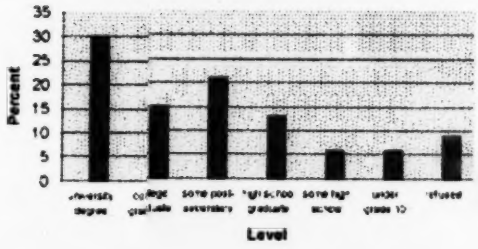


Fig. 15c Education level



APPENDIX B

Sample Survey

Psychosocial Impacts of the 1997 Red River Valley Flood

Date:

Time:

Interviewer:

Respondent (s):

Address:

Telephone Number:

Community:

Results Requested Y N

Card Left Y N

Interview Number in community

Interview Number (of total)

I'D LIKE TO ASK YOU SOME QUESTIONS ABOUT HOW YOUR LIFE WAS DISRUPTED BY THE FLOOD. FIRST I"D LIKE TO ASK SOME QUESTIONS ABOUT THE DAMAGE TO YOUR HOME AND PROPERTY.

1. Do you own or rent your home? A) rent B) own C)other (describe)

2. Do you own property that was impacted by the flood ?

A) yes B) no C) don't know D) refused

If yes , what type of property? (check as many as apply)

a) personal property including home

b) business property

what type of business?

c) other property (please describe)

3. Were you told by officials(during the flood) that your home was at risk from the flood (i.e. official notification)?

A) yes B) no C) don't know D) refused

If yes , how were you told?

4. Did you have water damage to your home? A) yes B) no C) don't know D) refused

(**If no** , go to question # 5 if business property, otherwise #6)

If yes, what depth of water was in your home (highest level)?

a) water in basement

b) water in first floor

c) water in second floor

d) water up to the roof

Can you briefly describe what type of damage your dwelling had?

(INTERVIEWER TO CHECK) A1) Lost home (irreparable)

B1) Have reparable damage to home

What is YOUR ESTIMATE of the total cost of the damage to your **home** ? (in dollars)

a) over 250,000

b) between 100,000and 250,000

c) between 50,000and 100,000

d) between 10,000 and 50,000

e) between 5000and 10,000

f) below 5000

don't know

refused

Have you had the damage assessed by a claims person?

A) yes B) no C) don't know D) refused

If yes , by whom?

Any comments about the result?

NOW I WILL ASK A FEW QUESTIONS ABOUT DAMAGE TO YOUR FARM OR BUSINESS IF APPLICABLE (IF NOT APPLICABLE MOVE TO QUESTION #18)

5. What type of damages or losses impacted on your business activity?

What is YOUR ESTIMATE of physical damages from the flood affecting this **business** activity (only) ?(in dollars)

a) over 250,000

b) between 100,000-250,000

c) between 50,000-100,000

d) between 10,000-50,000

e) between 5000-10,000

f) under 5000

g) don't know

h) refused

What is YOUR ESTIMATE of lost revenue from this business activity (only) due to the flood?(in dollars)

a) over 250,000

b) between 100,000-250,000

c) between 50,000-100,000

d) between 10,000-50,000

e) between 5000-10,000

f) under 5000

g) don't know

h) refused

I'D LIKE TO LOOK AT WHAT MEASURES YOU TOOK TO PROTECT YOUR HOME OR BUSINESS IF ANY...

6. Were measures taken to protect your personal residence or business property?

A) yes B) no C) don't know D) refused

If yes, what measures?

.....such as ... (CHECK AS MANY AS APPLY)

PERSONAL PROPERTY

a) built earth dike on property

b) built sandbag dike around buildings

c) built earth dike elsewhere

d) built sandbag dike elsewhere

e) pumped water away from or out of home

f) moved articles or furniture to higher ground

moved furniture/ articles off property

other (explain)

BUSINESS PROPERTY

a) built earth dike on property

b) built sandbag dike around buildings

c) built earth dike elsewhere

d) built sandbag dike elsewhere

e) pumped water away from or out of home

f) moved articles or furniture to higher ground

moved furniture/machinery/livestock/articles off property

other (explain)

I'D LIKE TO ASK ABOUT HOW THE FLOOD AFFECTED YOUR LIVELIHOOD, IF AT ALL...

7. **Due to the flood,** did you lose income from your job or livelihood?

A) yes B) no C) don't know D) refused

If yes , your income loss was due to (check all that apply)

a) lost job (permanent)

b) forced absenteeism from work days

c)lost business activity

d)other (please describe)

How much income do YOU ESTIMATE that you lost to date (all sources of livelihood activity)? (in dollars)

a) Over 100000

50000-100000

c) 10000-50000

d) 5000-10000

under5000

Don't Know

Indicate 'household' income loss with ''*

IF YOU RECEIVED AN EVACUATION ALERT OR WERE EVACUATED I WOULD LIKE TO ASK YOU SEVERAL QUESTIONS ABOUT THAT EXPERIENCE...

(OTHER RESPONDENTS MOVE ON TO QUESTION # 18)

8. Did your *immediate* family receive an evacuation alert notice?

A) yes B) no C) don't know D) refused

If yes , how long were you on alert? days

9. Was your i *mmediate* family evacuated?

A) yes B) no C) don't know D) refused

IF NO, MOVE TO QUESTION #18

If yes , for how many days?

Did you have adequate notice in your opinion?

a) yes b) no c) don't know d) refused

To *where* were you initially evacuated?

How good did you feel the accommodation was?

a) excellent

b) good

c) poor

Did you have to split up your family?

A) yes B) no C) don't know D) refused

Did you have to move more than once?

a) yes b)no c) don't know d) refused

If yes , list other types of accommodation?

10. How **adequate** was communication about evacuation procedures in your experience? Please describe...

11. Can you tell me who you usually turn to for support and help **in your community** i.e. your support network?

(check as many as apply)

a) friends

b) extended family

c) neighbors

d) local professionals

e) usual support network not in community

f) other (please describe)

While evacuated, how much contact did you have with your **usual** support network in your community?

a) lots of contact

b) some contact

c) little contact

d) no contact

e) usual support network not in community

f) don't know

g) refused

During or since the flood , do you feel you have expanded your support network **within** your community?

A)yes B)no C)don't know D) refused

REGARDING SCHOOL...

12. Do you have children in school?

A) yes B) no C) don't know D)refused

(IF NO, EVACUATED BUSINESSES MOVE TO QUESTION #14 , OTHER RESPONDENTS TO QUESTION # 18)

If yes , how many? Their ages?

How much school time did they miss while evacuated? (EACH CHECK MARK TO REPRESENT 1 CHILD)

a)none

b)1 day

c)1 week

d)1-2 weeks

e)2 weeks - 1 month

f) over 1 month

What arrangements , if any, were made to have them attend school while you were evacuated?

13. Can you briefly describe the major problems you had to deal with during the evacuation ?

(transportation issues, daycare, childcare, pets care, moving, accessing sandbags, finding labour, etc…)

NOW I'D LIKE TO DISCUSS EVACUATION OF YOUR FARM OR BUSINESS (IF NOT APPLICABLE MOVE TO QUESTION# 18)

14. Are your personal property and business property the same?

A) yes B) no C) don't know D) refused

How long was your *business property* evacuated?

days

15. Is your business activity " farming" ?

yes B) no C)don't know D) refused

16. Did you need to relocate any equipment?

A) yes B) no C) don't know D) refused

If yes , what type?

What problems, if any, had to be overcome to relocate your equipment?

17. Did you need to relocate any livestock?

A) yes B) no C) don't know D) refused

If yes , what type (s)? What number (s)?

What problems, if any, had to be overcome to relocate your livestock?

NOW I"D LIKE TO ASK YOU A FEW QUESTIONS ABOUT HOW YOU ADAPTED TO THE FLOOD SITUATION

18. Was this the first flood you ever experienced first- hand?

A) yes B) no C) don't know D) refused

If no , do you feel the previous experience helped you to cope?

a)yes b)no c) don't know d) refused

19. **Prior** to this flood were you aware that your property was at risk for flooding?

A) yes B) no C) refused D) don't know

20. How much **warning** (from whatever source) did you have that your property was at serious risk?

days

21. Do you feel that having this **warning** ...

A) increased your stress?

B) decreased your stress?

C) had no impact on your stress?

22. Please indicate how much you felt/experienced each of these *emotions* at the **peak** of the flood event by

---

RANKING HOW STRONGLY YOU EXPERIENCED THE EMOTION ,IF AT ALL---RANK THE FEELINGS FROM 0 TO 4 WHERE 0 MEANS YOU DID NOT EXPERIENCE THE EMOTION AT ALL , 1 MEANS SLIGHTLY, 2 MEANS SOME ,3 MEANS QUITE A BIT AND 4 MEANS THE FEELING WAS EXTREMELY STRONG

A) sense of control over life 4 3 2 1 0

B) confusion 4 3 2 1 0

C) fear 4 3 2 1 0

D) sense of dependency on others 4 3 2 1 0

E) anger 4 3 2 1 0

Any comments about these feelings?

During the **peak** of the flood, how did you cope with your fears and worries? (such as keeping busy, talking to others, ignoring feelings, counselling...)

Now rank the same *emotions* according to how you are feeling **now** in relation to the flood

A) sense of control 4 3 2 1 0

B) confusion 4 3 2 1 0

C) fear 4 3 2 1 0

D) sense of dependency on others 4 3 2 1 0

E)anger 4 3 2 1 0

Any comments about these feelings?

Since the flood, how have you coped with your fears and worries? (such as keeping busy, talking to others, ignoring feelings, counseling...)

FOR THOSE WHO WERE EVACUATED ONLY

23. Were any **crisis** related services made available to your family at your place of relocation?

A) yes B) no C) don't know D)refused

If yes , did you use any service(s)?

a) yes b) no c) don't know d) refuse

Which ones? (1)

(2)

(3)

Who provided it? (1)

(2)

(3)

How satisfied were you with the service (s)? (NUMBER DESIGNATING A PARTICULAR SERVICE TO BE PLACED NEXT TO CORRESPONDING SATISFACTION RATING)

a1)very satisfied

b1)somewhat satisfied

c1)slightly satisfied

d1) not satisfied

e1)don't know

f1) refused

ALL RESPONDENTS TO ANSWER

24. **Other than** crisis counseling for evacuees, have you or any family members sought counseling during or since the flood?

A) yes B) no C) don't know D) refused

If yes , from whom (circle all that apply)?

social services

local health professional

non local health professional

mental health

guidance counselor

pastor

volunteer with Red Cross

volunteer with Salvation Army

Other (describe)

Can you share the main reason (s) for the counseling (if willing)?

I WOULD LIKE TO ASK YOU A FEW QUESTIONS TO HELP ME UNDERSTAND THE IMPACT THE FLOOD HAS HAD ON YOUR FAMILY LIFE

25. Were there more disagreements/ arguments **within the family** during/since the flood than before the flood?

A)yes B)no C)don't know D) refused

If yes , what were the disagreements about (if willing)?

26. Were there more disagreements/ arguments **with people outside the family** during/since the flood than before the flood?

A)yes B)no C)don't know D) refused

If yes , with whom (if willing)?

What were the arguments about (if willing)?

27. **Since** the flood , do you feel there has been increased conflict *in general* in your family that is **due** to the flood?

A) yes B) no C) don't know D) refused

If yes , what have you seen/experienced within the family that makes you think the conflict has increased (if willing) ?

What do you think are the causes of the **family** conflict (if willing) ?

28. Has any person(s) in the family seemed particularly under stress?

A) yes B) no C) don't know D) refused

If yes , whom?

Any comments on why that might be?

29. Do you feel there were any positive outcomes for your family from going through the flood experience?

A) yes B) no C) don't know D)refused

If yes , please explain the positive outcome(s)?

I WOULD LIKE TO ASK YOU TO CONSIDER THE IMPACT YOU FEEL THE FLOOD EXPERIENCE HAS HAD ON **YOUR** (RESPONDENT ONLY) OVERALL HEALTH. I'D LIKE TO BEGIN WITH QUESTIONS RELATED TO STRESS....

30. **During** the flood did you feel **more** under stress than before the flood?

A) yes B) no C) don't know D) refused

If yes , was it a general feeling of anxiety (i.e. free-floating) related to particular aspects of your situation (i.e. stressors)

c) both d)don't know e)refused

What were the signs that you were under stress i.e. that were/are indicators to you...?

What do you believe were the main sources /triggers of stress to you during the flood?

Overall , how would you classify your level of stress during the flood ?

a) high

b) moderate - high

c) moderate

d) low

31. **Since** the flood has been over, do you feel more stress than before the flood?

A) yes B) no C) don't know D) refused

If yes , is it a general feeling of anxiety (i.e. free-floating) related to particular aspects of your situation (i.e. stressors)

c) both

d)don't know

e)refused

What are the signs that you are under stress i.e. that were/are indicators to you...?

What are the main sources/ triggers of stress **since** the flood?

Overall , , how would you classify your stress **since** the flood?

a) high

b) moderate

c) low

32. **During** the flood did you get less sleep?

A) yes B) no C)don't know D) refused

If yes, would you like to make any comment on why this might be?

Since the flood, have you gotten less sleep?

A)yes B)no C)don't know D)refused

If yes, would you like to make any comment on why this might be?

33. **During** the flood did you feel **more** depressed and / or unhappy than before the flood?

A) yes B) no C) don't know D) refused

If yes, would you like to make any comment on why this might be?

Since the flood, have you felt more depressed/unhappy than before the flood?

A) yes B) no C) don't know D) refused

If yes, would you like to make any comment on why this might be?

34. **During** the flood, did you have more trouble than usual coping with problems that arise?

A) yes B) no C) don't know D) refused

If yes, would you like to make any comment on why this might be?

Since the flood have you had more trouble than usual coping with problems that arise?

A) yes B) no C) don't know D) refused

If yes, would you like to make any comment on why this might be?

35. **During** the flood did you feel **more** irritable than before the flood?

A) yes B) no C) don't know D) refused

If yes, would you like to make any comment on why this might be?

Since the flood, have you felt **more irritable?**

A) yes B) no C) don't know D) refused

If yes, would you like to make any comment on why this might be?

THESE NEXT FEW QUESTIONS WILL FOCUS ON YOUR PHYSICAL HEALTH

36. **Before the flood,** how would *you* describe your *general* health ?

A)excellent

B) good

C) fair

D)poor

E)don't know

F)refused

Since the flood, how would *you* describe your *general* health?

A)excellent

B)good

C)fair

D)poor

E)don't know

F)refused

37. Were you or an immediate family member physically / emotionally injured in the flood?

A)yes B) no C)don't know D) refused

If yes , who? Respondent or

Did you/ they require medical treatment?

a)Yes b) no c)don't know d) refused

Did you/ they require hospitalization?

a)Yes b) no c) don't know d) refused

38. At any time **during or** since the flood , have **you** had …

A) more chest pain than prior to the flood ? yes no don't know refused

B) more lightheadedness or dizziness? yes no don't know refused

C)more tingling/numbness yes no don't know refused

D)less / more appetite? yes no don't know refused

E) excessive tiredness? yes no don't know refused

F) more digestion problems? yes no don't know refused

39. Are there any health complaints/ problems you had during or since the flood that you would like us to know about?

yes no don't know refused

If yes, please describe

NOW I'D LIKE TO ASK YOU SOME QUESTIONS ABOUT THE AREA YOU LIVE IN AND THE IMPACT THE FLOOD HAS HAD ON YOU AND YOUR COMMUNITY

40. **Prior** to the flood how often would you visit with neighbors? (choose the best description)

A) never

B) seldom (once a year)

C) 1-2 times a month

D) 1-2 times a week

E) very often (daily)

F) don't know

G)refused

Since the flood how often do you visit with neighbors?

A) never

B) seldom (once a year)

C) 1-2 times a month

D) 1-2 times a week

E) very often (daily)

F) don't know

G) refused

41. **Prior** to the flood how often did you frequent local businesses? (choose the best description)

A)never

B) seldom (once a year)

C) 1-2 times a month

D) 1-2 times a week

E) very often (daily)

F)don't know

G)refused

H) not applicable

Since the flood how often do you frequent local businesses?

A)never

B)seldom(once a year)

C) 1-2 times a month

D) 1-2 times a week

E) very often (daily)

F)don't know

G)refused

H) not applicable

42. Was your social life in the community impacted by the flood?

A)yes B)no C)don't know D)refused

If yes , in what way?

43. **Prior to** the flood, had you ever worked with others or joined a group/organization in your community to do something about some community problem?

A)yes B) no C) don't know D) refused

During or since the flood have you worked with others or joined a group/organization to do something about a community problem **related to the flood?**

A) yes B) no C) don't know D) refused

If yes , what problem?

44. **Prior to** the flood, how involved were you in community events, including public meetings?

A)very involved

B) somewhat involved

C) slightly involved

D) not at all involved

E) don't know

F) refused

During or since the flood , how involved were/ are you in community events, including public meetings?

A)very involved

B) somewhat involved

C) slightly involved

D) not at all involved

E) don't know

F) refused

45. Who did you turn to for support and help during the flood?

(check as many as apply)

A)neighbors

B) family

C) local businesses

D) non-local businesses

E) local community groups

F) medical professionals

G) mental health professionals

H) Salvation Army

I) Red Cross

J) community church

K) Mennonite Disaster Committee

L) provincial government (explain)

M) municipal government

N) other (explain)

O)friends

46. Which services or institutions did you need during and after the flood?

(check as many as apply)

A) social services

B) mental health

C) bank

D) insurance company

E) crop insurance

F) Emergency Measures Organization Claims Department

G) pastoral

H) Salvation Army

I) construction trade (plumber, electrician etc.)

J) Red Cross

K) other (please describe)

47. How much support in general did /do you feel from other **community** members including local businesses?

A) a lot of support

B) some support

C) a little support

D)no support

48. How much support in general did/do you feel from the **provincial government?**

A) a lot of support

B) some support

C) a little support

D)no support

I'D LIKE TO ASK YOU A FEW GENERAL QUESTIONS ABOUT RECOVERY AND CLEAN-UP AFTER THE FLOOD

49. Did you have clean-up to do on your personal property ?

A)yes B) no C) don't know D) refused

If no , go to question #61

If yes , how long did clean-up take?

a)1-6 days

b)1-4weeks

c)1-2 months

d)still continuing

anticipated end?

What clean-up problems/ hazards had to be dealt with , if any?

NONE or

Which of these problems/hazards remain?

NONE or

IF YOU HAVE BUSINESS PROPERTY IMPACTED BY THE FLOOD...

50. Did you have clean-up to do on your business property ?

A) yes B) no C) don't know D) refused

If no , go to question # 51

If yes , how long did clean-up take?

a)1-6 days

b)1-4weeks

c) 1-2 months

d)still continuing

anticipated end?

What clean-up problems/ hazards had to be dealt with ?

NONE or

Which of these problems/hazards remain?

NONE or

Are you considering or planning to A) relocate B) close down C) sell your business or farm as a result of the flood? (CIRCLE AS MANY AS APPLY)

A) yes B)no C)don't know d) refused

If yes , please explain?

What does this mean to you and your family?

LOOKING AT THE RECOVERY PERIOD AND BEYOND...

51. Are any of your items lost/damaged in the flood **irreplaceable?**

A) yes B)no C)don't know D)refused

If yes , please briefly describe what they were?

What does their loss mean to you?

52. Are you concerned about current and future property values because of the flood?

A)yes B)no C)don't know D)refused

53. Because of the flood, have you or **considered or made plans** to move residence permanently?

A)yes B)no C)don't know D)refused

If yes, please explain.

What would this mean to you and your family?

SOME FINAL QUESTIONS ABOUT THE OVERALL IMPACT OF THE FLOOD ...

54. PLEASE RANK ON A SCALE FROM 0-4 THE **OVERALL** IMPACT THE FLOOD HAS HAD ON THE FOLLOWING (0 MEANS NO IMPACT AND 4 MEANS EXTEME IMPACT)

A) your family life 4 3 2 1 0

Please explain

B) what you feel are your priorities in life 4 3 2 1 0

Please explain

C) your view of your community 4 3 2 1 0

Please explain

D) your sense of financial security 4 3 2 1 0

Please explain

55. Do you have any final comments you'd like to make about the flood and its impact on you , your family or community?

56. Do you have any comments about the survey?

Psychosocial Impacts of the 1997 Red River Valley Flood

SOCIODEMOGRAPHIC INFORMATION

Gender (of Respondent): A) M B) F

Age:

A) over 65

B) 55-64

C) 45-54

D) 35-44

E) 25-34

F) 18-25

Highest Education Level Achieved:

A) university degree

B) community college graduate

C) some post-secondary

D) high school graduate

E) some high school

F) under grade 10

G) other

Number of years in the Community

Number of years at Current Address

Do you identify closely with any particular ethnic or cultural group? yes no refused don't know

If yes, which one?

What is your main occupation?

Other occupation(s)?

Who else lives in your household besides yourself?

How many , if any, are children i.e. under 18

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